A review on printed circuit boards waste recycling technologies and reuse of recovered nonmetallic mat

Abstract

From the use of renewable resources and environmental protection viewpoints, recycling of waste printed circuit boards (PCBs) receives wide concerns as the amounts of scrap PCBs increases dramatically In recent years there has been increasing concern about the growing volume of end of life electronics and the fact that much of it is consigned to landfill without any attempt being made to recycle the nonmetallic materials it contains. The production of electric and electronic equipment (EEE) is growing rapidly in most developed countries. Waste of electric and electronic equipment (WEEE) is significantly increasing. A large amount of nonmetallic materials in printed circuit board (PCBs) are disposed of by combustion and disposal in landfill as the main method for treating nonmetals in PCBs, but it may cause secondary pollution and resource wasting. Therefore, it is urgent to develop a proper recycling technology for waste PCBs. Several recycling technologies and potential reuses of recovered nonmetallic PCBs were reviewed in this paper. From the review, it can be said that, PCBs recycling process usually includes three process which is pretreatment, physical recycling, and chemical recycling and the recovered nonmetals were used to make models, construction materials and composite boards. The PCB nonmetal products have better mechanical characteristics and durability than traditional materials and fillers. Products derived from PCB waste processing have been brought into industrial production. The study shows that PCB nonmetals can be reused in profitable and environmentally friendly ways.